

Study of SaaS and its Application in Cloud

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Abstract: This paper contains information on Cloud computing and various services provided by it. Services provided are SaaS, PaaS&IaaS. We will mainly focus on SaaS in which customer is not needed to pay for the entire software; the customer could pay for only those services which they need.

Keywords: Cloud, IaaS, SaaS, Soft serve, PaaS.

I. INTRODUCTION

Cloud computing is basically an internet architecture that provides service from anywhere and at anytime. We have tried to make the concept of SaaS in cloud clear to the people, so that they can realize that cloud is a very convenient technology when it comes to software as a service, and that it is capable of handling big industrial projects as well.

II. CLOUD COMPUTING

Cloud computing is one technology model which provides “on-demand” services to end user. Cloud computing is synonym for distributing computer over network and it means ability to run program or many application on computer at same time. It allows users to access application that actually reside at a location other than the user's Computer.

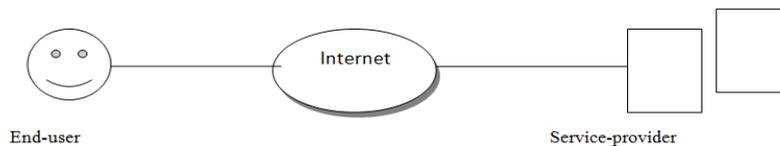


Fig1: Computing System

1. Importance of cloud computing

Increase in connectivity and the increase amount of data has led to many providers and data centers, by distributing data and replicating it across the servers on demand. Using this technology, we can access our data from anywhere around the cloud. Cloud is one network, which relies on sharing of resources. In these, user need not have to install any software on their own machine.

Example: A server has different software installed like java, adobe reader, etc and the user wants to run & compile any java file on his own computer but java software is not installed. So, using cloud the user can run his java file on his machine without actual installation. This saves the time and also leads to reduction of cost and memory requirements.

2. Components in cloud model

Cloud model is made up of three components:

i. Client

Clients are just computers which are operated by user. Clients are device that the end users interact with to manage their information on cloud. Clients just access the services which are provided by the cloud. i.e. they are thin clients

ii. Data centre

It is a collection of services where the application are provided.

iii. Distributed server

It provides software, hardware and information resources. Its main work is to provide services to end user. If one site fails at the server, the services will still be accessible as the data is replicated.

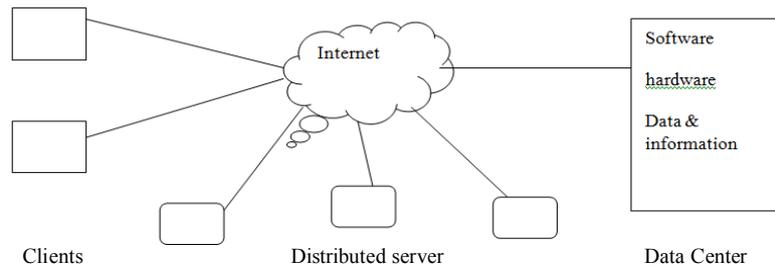


Fig. 2. Cloud's Components

3. Characteristics

- i. Shared infrastructure
- ii. Network access
- iii. Manage metering
- iv. Location independence
- v. Allows efficient computing by centralization

4. Major Services Delivered by Cloud Computing

- Software as a Service (SaaS)
- Infrastructure as a Service (IaaS)
- Platform as a Service (PaaS)
- Hardware as a Service (HaaS)
- Everything as a Service (EaaS)

i. SaaS

It uses internet to deliver applications that are not installed on our machine and are managed by third-part vendors and only the interface can be accessed by clients. It is more popular and very easy to use.

ii. PaaS

It uses a specific platform to deliver the resources that essential for computations. It can effectively be used to develop, test or deploy a software or hardware. It is most complex of all services.

iii. IaaS

It delivers computer infrastructure like virtual servers and networking. Instead of purchasing whole of software, hardware or network equipments, users can use the resources in pay-per-use form. . It is designed to replace the functions of an entire data center. This saves cost and time of equipment deployment but does not reduce cost of configuration, integration or management and these tasks must be performed remotely.

III. SOFTWARE-AS-A-SERVICE (SaaS)

Software as a Service (SaaS) is a combination of business model and application delivery model. Software is considered as one of the basic need for any student, professional, business, school, college, organization etc. It allows the consumers to use an application on pay-per-use basis. This eliminates the need to install and run the software on our own machine. Consumers are basically thin clients that access the service using an interface over the cloud.

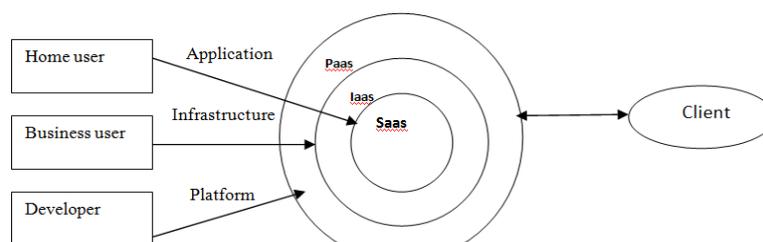


Fig 3.SaaS, IaaS and PaaS Structural usage

Previously without cloud, Software services were used individually. This used a large amount of memory, time and money wastage. There were some terms and conditions that were to be followed by a hardware component which was in-need to follow the software installation requirements. Also if configuration is in case not satisfied by hardware according to software it may not get installed on it. Some other issues also were like purchasing of license key for each software which should be installed on different hardware. And many more issues were there that must be solved. So SaaS solved the problem by using cloud as its working condition.

1. Basic feature

The basic feature is that it increases the functionalities and adds capabilities, without any need of investing in new architecture, training new personnel or licensing new software. It is totally based on pay-per-use concept. In software as a service (using cloud computing), the customers are benefited as many customers can access the same application, through the browser it also means that there is no investment in the server or in the software licensing, also here the costs are low.

2. Characteristics

- i. Replication and Recovery
- ii. Hosting
- iii. Testing quality assurance/quality control

IV. COMPARISON: TRADITIONAL SYSTEM V/S CLOUD COMPUTING SYSTEM

1. Traditional System

In traditional software system, we had to install all software on our personal computer. Due to this, the software was unavailable to the user when moved from one machine to another. Also the results stored on one machine cannot be accessed from another machine.

Drawbacks of this system are as follows:

- (1) Update: Updating the software creates a problem because we need to update software on every system.
- (2) Accessibility: Applications are limited only to a particular system.
- (3) Data loss: As large amount of data is stored on personal computers, data recovery at the time of disaster is very difficult.
- (4) Initial set up cost is also more.
- (5) More memory consumption.
- (6) License cost as most of the software are not freeware.

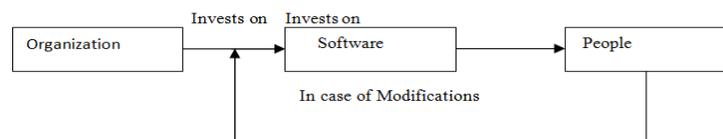


Fig 4: Traditional System

2. Soft serve (Application of SaaS)

In "Soft serve" which is basically a web port, there is no need to install particular software on every machine. All the required software is installed on a centralized server and is accessed on-demand. Almost all the problems of traditional software system are solved by this application.

Instead of updating the software on individual machines, the software is only updated on the server and the new services can be used by all users. If the user moves from one place to other or one PC to other where the required software is not installed, user can just login onto the server and use the required service. Hence the service accessibility is not limited to a particular machine rather can be accessed from anywhere. As data is mostly stored on server and not on client side, data recovery is easy. It is based on Software as a service (SaaS) model of cloud computing.

Earlier in industries what used to happen was that, the companies were forced to buy the whole software, then hire a team for using the software and this used to cost them a huge amount, also if there used to be any modifications, then they were forced to update the software giving a significant amount again. This used to be very unconventional in the business point of view.

But with software as a service in cloud computing, one can just buy the software they need, and if there are any updates or modifications they are done automatically. The companies are not supposed to pay again, which is way more convenient to them.

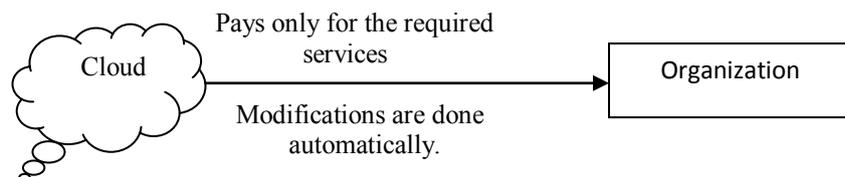


Fig.5. Cloud System

V. IMPLEMENTATION OF SOFT SERVE

Here we have used Microsoft Windows for implementing the client, now in this whole project our main aim was to create a server where one can find all the software they need and can access it from wherever they want. For this we have used the .net framework.

1. Purpose of using the .net framework

- i. We needed a platform which is language independent, as we all were specialized in different languages.
- ii. We needed a common language where all the classes and functions are available, and also provide scope to add user defined classes.
- iii. We needed a framework where we don't need to convert our code into html, we can write it in our language and it could be converted into html on its own.
- iv. Also there are various .Net compliant languages like VB.NET, C#, J#, VC++.
- v. Here we have used C# because it is the only language that can utilize all the classes of Framework Class Library (FCL). FCL is library for .Net that contains all the key words, packages, classes, etc.

In our project there is a server where all the softwares are pre-installed. If a user wishes to access these softwares, it has to first login to the server.

The server will provide them with two options:

- a) **Temporary user:** such types are users are those who don't access the data regularly. Who just comes to have some services and then leaves.
- b) **Permanent user:** these will be those users who always take data from this server.

This division was necessary to allocate the memory to the users in cloud and is also a convenient way of providing services. The temporary user can store their data temporarily, and when they are done the data will replenish, and for permanent users the data will be stored in the memory location, permanently.

2. Working

Just take an example of a computer lab, where the students need to work on java. Here the students don't need to install the whole java setup in their computers, rather they can just send their code to the server and the server will compile the code and then run it, and return the output.

In big organizations they will not be required to every time install the software they need, they could just use the software they are interested in. this will not only provide them services but will also store their data. With cloud one can access the data from wherever they want, one just needs to send their request to the server and they get the output. Even the datastorage of a cloud is very strong.

3. Security

There is also a provision of security for this project so the data will always be secured, with the login forms their will appear a code, that code will be sent to the mobile number of the user, then the page will ask for that code, in order to make sure of the user's identity and verification will be done, then the data access will be provided.

Also we kept an admin login, this admin login is for the one who will handle and update the server, and any unauthorized access will be blocked.

VI. CONCLUSION

SaaS provides user with high flexibility with sufficiently low cost. It also provides the companies better efficiency with very low maintenance cost. Using SaaS, the business could be done without any tenants or technological limitations.

REFERENCES

Books:

[1] Keuth Jeffery. "*The future of cloud computing*".

Papers:

[2] "*Cloud Computing- A brief introduction*" by LAD Enterprizes, Inc is a Management and Information Technology firm Paper

[3] Ojala, A. (2012). "*Software Renting in the Era of Cloud Computing*". In IEEE (Ed.), IEEE Fifth International Conference on Cloud Computing (pp.662-669). Yhdysvallat: IEEE. doi:10.1109/CLOUD.2012.71

[4] Ojala, A. (2013). "*Software-as-a-Service Revenue Models*." IT Professional 15(3), 54-59. doi:10.1109/MITP.2012.73[4] "*SaaS Architecture*" Progress software.

Websites:

[5] <http://www.infoworld.com>

[6] <http://www.searchcloudcomputing.techtarget.com>

[7] *Wikipedia (on SaaS and cloud computing)*